

UVA WELLASSA UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
END SEMESTER EXAMINATION – SEMESTER II – 2007/2008
CST204-2 SOFTWARE ENGINEERING AND QUALITY
ASSURANCE

Time Allowed: 1 ½ HOURS

Answer Q1 and Two of other three Questions

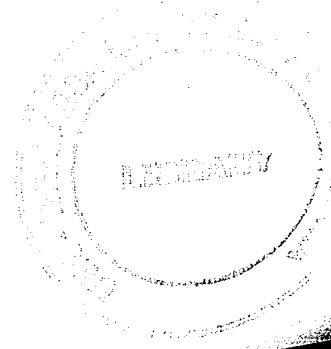
PART B

Q1 E.H. Cooray Sons Ltd. requires you to develop a new system for their furniture shop. The normal processes that the system performs are as follows:

- **Take an order from a customer.** In this process, the customer provides the ID of the desired item and possibly an ID for the fabric with which it is to be upholstered. They also provide their personal details (name, address and credit card number). All Purchases are paid for by credit card and the payment is approved by the credit card company. If the requested item is not currently in stock it may be back - ordered if the customer so desires.
- **Provide a management report.** Each week, the system will provide a list of the orders which have been placed during the previous week, including the status (being processed, filled, or back - ordered) of each.
- **Add or delete furniture items from the system.** Authorized clerks can add or delete furniture items from the system. Items are added when newly included in the *Tundra Furniture* catalogue and deleted when removed from it. When adding an item, the clerk supplies the item ID, the list of allowed fabric IDs (Possibly empty), and the ID of the warehouse which will supply this item. When deleting, only the item ID is needed.
- **Transfer an item to another warehouse.** Each item is supplied by a particular warehouse. Authorized clerks need to be able to transfer the responsibility for supplying an item from one warehouse to another.
- **Send out the catalogue to past customers.** Each year the system must produce a mailing list from the past and current customers so that the year's catalogue can be sent to them.

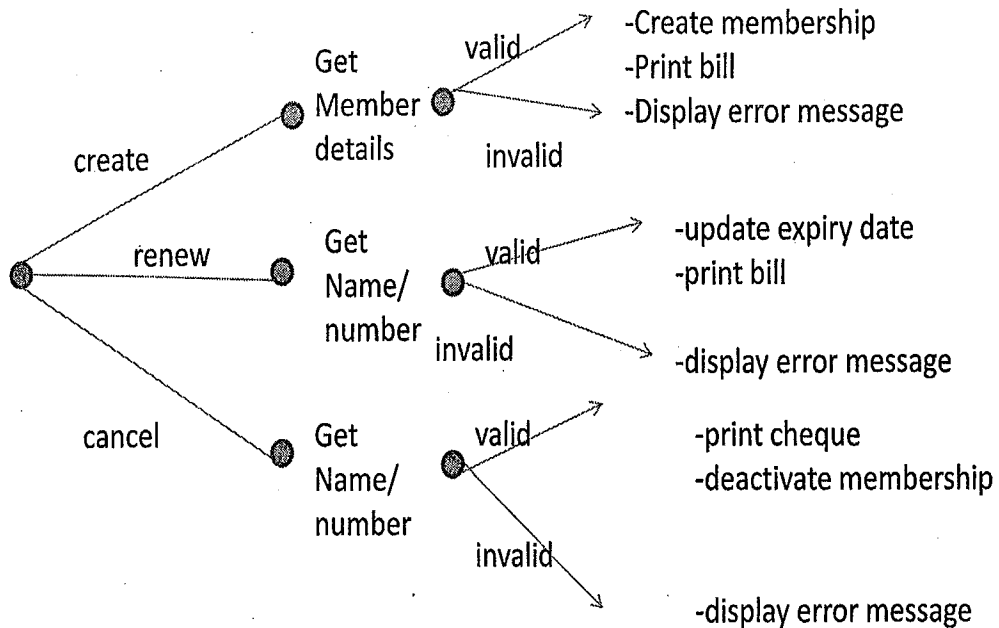
(a) Draw the context diagram for above business (10 marks)

(b) Draw Level I DFD for above business(25 marks))



Q2 Name the methods you can present a Elementary Process Description

(a) Build a decision table for the following decision tree (7marks)



(b) Summarize the following requirements in the form of a decision table. (10 marks)

In the Uva Wellassa University Computer Lab, the Air conditioner is proposed to maintain under automatic basis. From sensors the new system can count the no of people inside the computer lab.

If outside temperature exceeds 23°C or number of people inside the computer lab is below 30 the two A/C machines should turn on. Otherwise only the fan should operate.

If outside temperature exceeds 23°C and number of people inside the computer lab exceeds 30 both two A/Cs and fans should turned on.

In lecture hours all the A/C should turn on and fans should turn off.

(c) Construct a Logical Data Structure (LDS) for the following. (8 marks)

CUSTOMERS make sales ORDERS. A single order has several PRODUCTS. Each customer is in one of 621 AREAS. Each customer is serviced by one of 20 DEPOTS. Each customer is allocated a depot depending on their customer location. All products are stocked in depots.

Q3 (a) For the short courses conducted by Uva Wellassa University, students outside the university can apply. If an application is accepted, the student must then register for the course. Students can follow the courses only if the registration is not suspended.

After the successful completion of the course the students are awarded the relevant certificate unless he/she has withdrawn the course. If a student couldn't complete the course successfully he/she will not get the certificate. Awarding a certificate may be rejected for some students due to lower grades below the University standards, incomplete payments and other reasons.

Formulate an Entity Life History (ELH) for student entity including Effect Correspondence Diagram (ECD). (15 MARKS)

(b) Management Information System (semi- detached) in Uva Wellassa University is estimated to have 64,000 lines of code. It is a mission critical system, so the reliability should be high.

- I. How long should it be scheduled? (7 marks)
- II. How many staff member will needed for this project?(3 marks)
- III. How many staff member you will need for this project if the Administration of Uva Wellassa University needs this project 10% early of schedule time?(5 marks)

Mode	Effort		Schedule			
	Very Low	Low	Nom High	Very High	Extra High	
Organic	$E = EAF * 3.2 * (KDSI)^{1.05}$		$TDEV = 2.5 * (E)^{0.38}$			
Semi-Detached	$E = EAF * 3.0 * (KDSI)^{1.12}$		$TDEV = 2.5 * (E)^{0.35}$			
Embedded	$E = EAF * 2.8 * (KDSI)^{1.20}$		$TDEV = 2.5 * (E)^{0.32}$			
Cost Driver	0.70	0.85	1.00	1.15	1.30	1.65

- Q4
- (a) What are the ethical issues deals in software development?
 - (b) Describe the software process. Distinguish between software process activities and software process model's activities. (**Hint:** Discuss about water fall model's activities with the software process)
 - (c) What are the four attributes of good software? Why do you think they are important?
 - (d) The manager of your company asks you to develop a system to automate current system. By giving examples, describe how you are going to explain the proposed system to him with the aid of diagrams in SSADM.